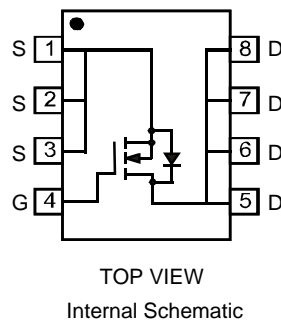


Features

- Low On-Resistance
 - 8mΩ @ V_{GS} = 10V
 - 9mΩ @ V_{GS} = 4.5V
 - 12mΩ @ V_{GS} = 2.5V
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.072 grams (approximate)



Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V _{DSS}	20	V
Gate-Source Voltage			V _{GSS}	±12	V
Drain Current (Note 1)	Steady State	T _A = 25°C	I _D	12	A
		T _A = 70°C		9.6	
Pulsed Drain Current (Note 3)			I _{DM}	42	A

Thermal Characteristics

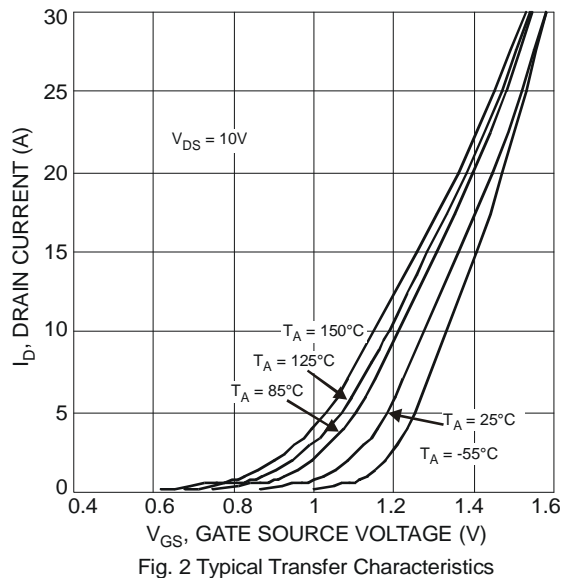
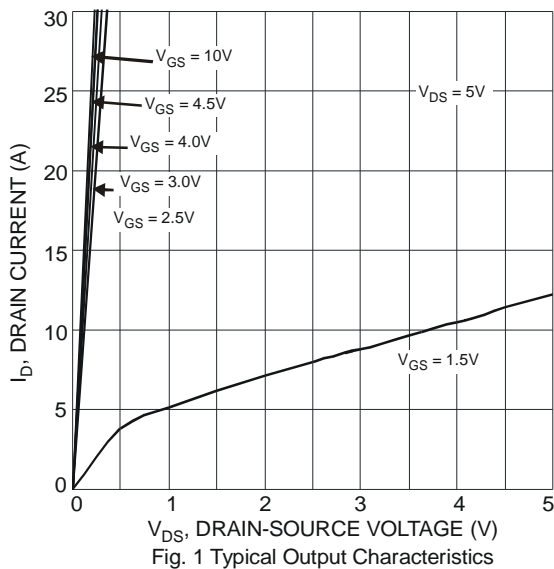
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	P _D	2	W
Thermal Resistance, Junction to Ambient	R _{θJA}	62.5	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- Notes:
1. Device mounted on 2 oz, FR-4 PCB, with R_{θJA} = 62.5°C/W
 2. No purposefully added lead.
 3. Pulse width ≤10μS, Duty Cycle ≤1%.
 4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV _{DSS}	20	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	μA	V _{DS} = 20V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±12V, V _{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	V _{GS(th)}	0.5	—	1.2	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	—	8 9 12	mΩ	V _{GS} = 10V, I _D = 12A V _{GS} = 4.5V, I _D = 10A V _{GS} = 2.5V, I _D = 8A
Forward Transconductance	g _{fs}	—	27	—	S	V _{DS} = 5V, I _D = 6.5A
Diode Forward Voltage (Note 5)	V _{SD}	0.5	0.7	1.2	V	V _{GS} = 0V, I _S = 3A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}	—	2555	—	pF	V _{DS} = 10V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	523	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	496	—	pF	
Gate Resistance	R _G	—	1.1	—	Ω	V _{GS} = 0V V _{DS} = 0V, f = 1MHz
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q _g	—	28.9 58.3	—	nC	V _{DS} = 10V, V _{GS} = 4.5V, I _D = 12A V _{DS} = 10V, V _{GS} = 10V, I _D = 12A
Gate-Source Charge	Q _{gs}	—	3.7	—		V _{DS} = 10V, V _{GS} = 10V, I _D = 12A
Gate-Drain Charge	Q _{gd}	—	11.4	—		V _{DS} = 10V, V _{GS} = 10V, I _D = 12A
						V _{DS} = 10V, V _{GS} = 10V, I _D = 12A

Notes: 5. Short duration pulse test used to minimize self-heating effect.



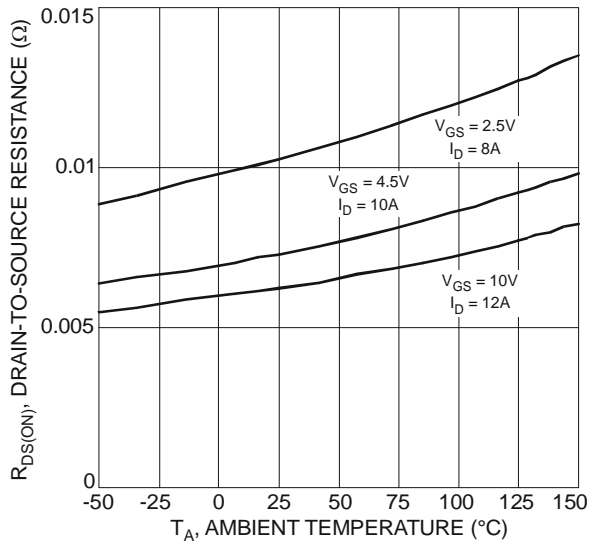


Fig. 3 On-Resistance Variation with Temperature

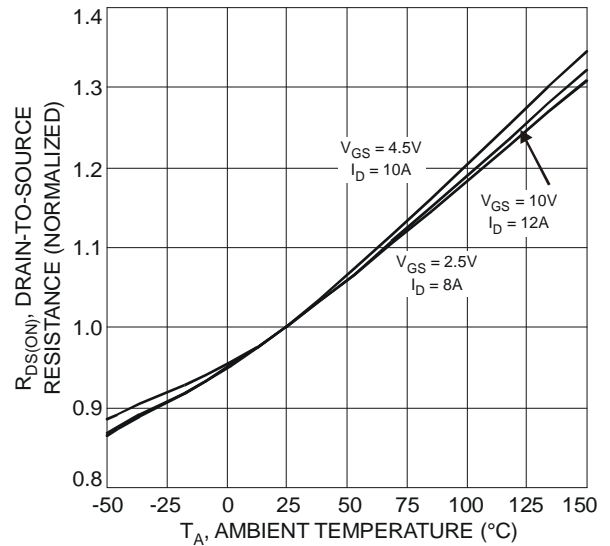


Fig. 4 On-Resistance Variation with Temperature

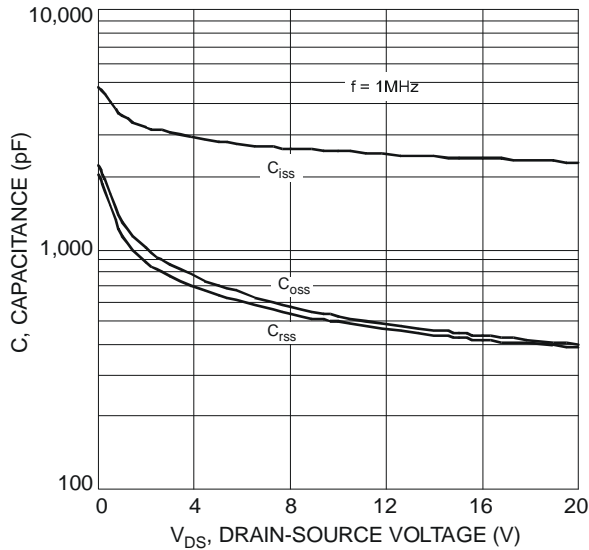


Fig. 5 Typical Capacitance

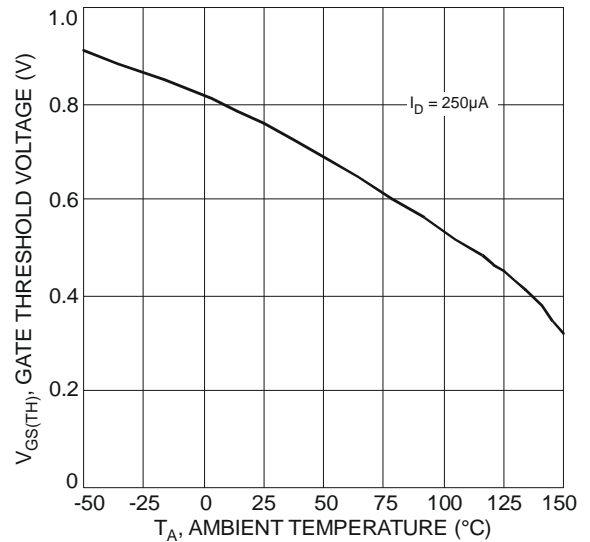


Fig. 6 Gate Threshold Variation vs. Ambient Temperature

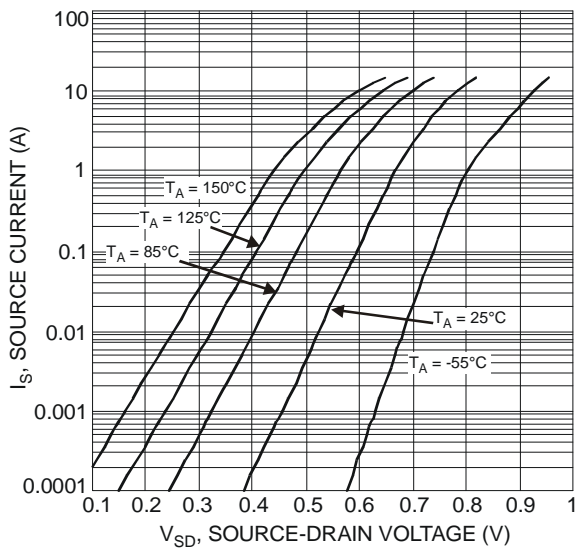


Fig. 7 Diode Forward Voltage vs. Current

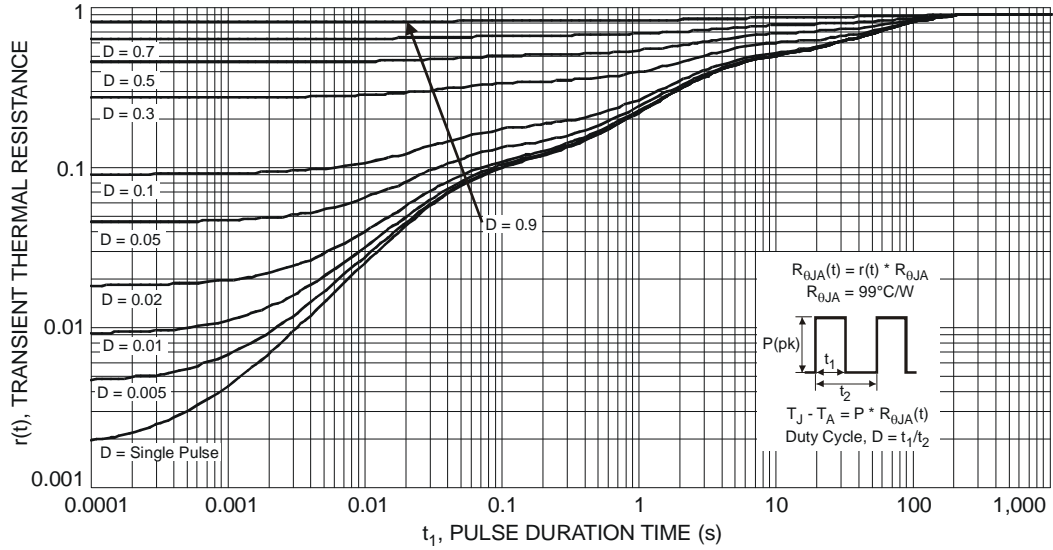


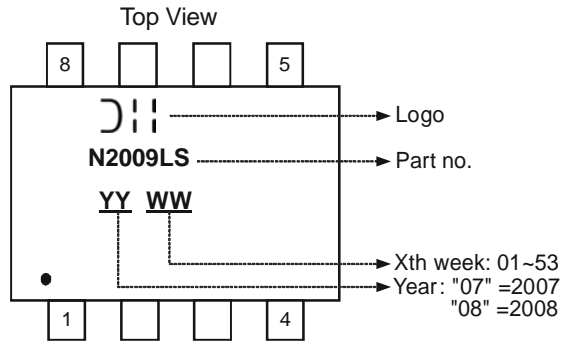
Fig. 8 Transient Thermal Response

Ordering Information (Note 6)

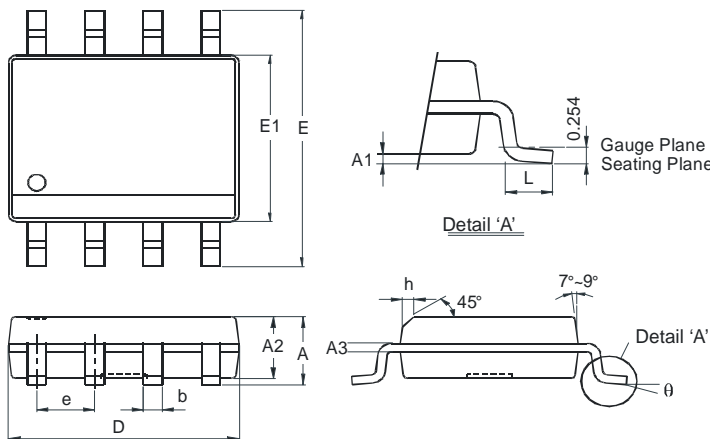
Part Number	Case	Packaging
DMN2009LSS-13	SO-8	2500/Tape & Reel

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information

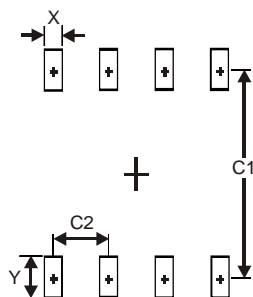


Package Outline Dimensions



SO-8		
Dim	Min	Max
A	-	1.75
A1	0.10	0.20
A2	1.30	1.50
A3	0.15	0.25
b	0.3	0.5
D	4.85	4.95
E	5.90	6.10
E1	3.85	3.95
e	1.27 Typ	
h	-	0.35
L	0.62	0.82
θ	0°	8°
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
X	0.60
Y	1.55
C1	5.4
C2	1.27

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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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